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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/083,253

04/17/2002

Norihiko Moriwaki

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03/07/2006

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.  
1800 DIAGONAL ROAD  
SUITE 370  
ALEXANDRIA, VA 22314

EXAMINER

AHMED, SALMAN

ART UNIT

PAPER NUMBER

2666

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/083,253	MORIWAKI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Salman Ahmed	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/17/2002 Claims.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 10 and 12 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 8, 9, 11, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/27/02, 4/17/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 7, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luijten et al. (US PAT 6999415), hereinafter referred to as Luijten in view of Chao et al. (Design and implementation of Abacus switch: a scalable multicast ATM switch, Selected Areas in Communications, IEEE Journal on Volume 15, Issue 5, June 1997 Page(s):830 – 843), hereinafter referred to as Chao.

In regards to claim 1, Luijten teaches a packet communication apparatus (figure

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3, switching device) comprising: an ingress interface (figure 3, switch adapter 19) for inputting plural packet data; a switch (figure 3, routing switching device 103) for switching paths of the packet data, having a plurality of input ports, a plurality of output ports (figure 3, element 20 input ports and 30 output ports), and a scheduler (figure 3, access controller 40); and an egress interface (figure 3, output buffer 35) for transmitting packet data transferred through switched path, ingress interface having a plurality of ingress buffers (figure 3, input buffers 11) for storing plural packet data a plurality of storing units (figure 3, input queue 12) corresponding to the plurality of ingress buffers: and a buffer control unit (figure 3, control unit 25) for controlling ingress buffers and storing units, and each of input ports having a port buffer (figure 3, access controller 40) wherein when packet data arrives at the head of the ingress buffer, a data portion including destination information in packet data is transferred to storing unit (column 4 lines 20-21, the arriving data packets are sorted in each input buffer 11), port buffer stores data portion which is output from said storing unit and, when output of said data portion a predetermined output port is not permitted by scheduler, port buffer discards data portion and determining whether to transfer data portion to predetermined output port in accordance with an instruction of scheduler (column 8 lines 35-40, the task of the data packet access controller 40 is again to deny data packets which arrive from an input buffer 11 despite the negative grant information GR. Those data packets are classified as non-compliant and are optionally discarded. As described above, the data packet access controller 40 serves for guaranteeing obeisance to the grant information GR), In regards to claim 12, a packet data transfer controlling method using a packet

communication apparatus (figure 4) having: an ingress interface (figure 4 element 19) for inputting plural packet data; a switch for switching (figure 4 element 13 and 14) paths of the packet data, having a plurality of input ports (figure 4 element 20), a plurality of output ports (figure 4 element 30), and a scheduler (figure 4 element 18); and an egress interface (figure 4 element 30) for transmitting packet data transferred via said switched path, ingress interface having a plurality of first storing units (figure 4 elements 12), a plurality of second storing units (figure 4 element 18) corresponding to the plurality of first storing units, and a control unit (figure 4 element 25 and 17) for controlling first and second storing units, and plurality of input ports having the corresponding plurality of third storing units (figure 4 element 35), method comprising the steps of: storing packet data in first storing unit (column 4 lines 20-21, the arriving data packets are sorted in each input buffer 11) and transferring a data portion including destination information of packet data to second storing unit; receiving data portion output from second storing unit by third storing unit (column 9 lines 39-46, the information, at which address in the output buffer 35 each data packet that is heading for a specific output port 30 is stored, is written into the output-queue-manager 17, more precisely, into the output queues 18 thereof This information is referred to as order information. For each data packet that is stored in the common output buffer 35 such order information is put at one place in that output queue 18, to which this data packet shall be sent), selecting data portion by scheduler (figure 4 element 18), and outputting said selected data portion to a predetermined output port (column 9 lines 46-54, the addresses are thereby sorted according to the corresponding output ports 30 (i.e., those output ports 30 for which the

packets stored at the respective addresses are heading). This means that each output port 30 retrieves the addresses of the data packets, which shall arrive at that output port 30, from the respective output queue 18. The address-manager 16 simultaneously handles one address at each point in time for each output queue 18).

In regards to claim 1, Luijten does not explicitly teach receiving data portion retransmitted from storing unit in response to an output request sent again from buffer control unit. In regards to claim 12, Luijten does not explicitly teach when data portion is not selected for predetermined output port by scheduler discarding data portion by third storing unit and, in response to an output request further issued from control unit, transmitting data portion to third storing unit by one of plurality of second storing units

In regards to claims 1 and 12, Chao in the same field of endeavor teaches, as the cell is transmitted to the MGN through a parallel-to-serial converter, the cell is also temporarily stored in a one-cell buffer. If the cell fails to successfully route through RM's, it will be retransmitted in the next cell cycle. During retransmission, it is written back to the one-cell buffer in case it fails to route through again (page 836, left column paragraph 3). In regards to claim 12, Chao in the same field of endeavor teaches switch fabrics are a lossy system, where cells may be discarded when the number of routing links is less than the number of incoming cells destined for the same output port (or output group).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Luijten's device to incorporate the scheme of retransmitting

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unsuccessfully routed data as taught by Chao. The motivation is that (as suggested by Chao, page 831, left column, paragraph two) such scheme introduces an architecture eliminating the possibility of cells being discarded totally due to the loss of contention in the switch fabric. It is known in the art that if depending on higher layer for data retransmission, overhead is high due to redundant steps like link resetting or reconnection etc.

In regards to claim 2, Luijten teaches buffer control unit selects one of a plurality of data portions included in plurality of storing units, copies the one from storing unit, and outputs the one to port buffer (column 4 lines 25-29, at the output of the input queues 12 a selector 26 serves for connecting at a certain point in time that respective input queue 12 which is allowed to transfer a data packet to the switching device 10 at that point in time).

In regards to claim 3, Luijten teaches when scheduler permits output of data portion to predetermined output port, the packet data portion to predetermined output port, data portion and packet data subsequent to data portion are transferred to predetermined output port via a switched path (column 6 lines 14-23, the data packet access controller 40 hence acts as a diagnosis system and the detected malfunction of a switch adapter 19 can be remedied by replacing or repairing that switch adapter 19. In a business environment where bandwidth is paid for, the owner of the defective switch adapter can also be charged for the resulting overuse of bandwidth. The most

useful treatment of the marked data packets is to discard them in order to avoid additional throughput latency and to avoid not processing compliant data packets).

In regards to claim 7, Luijten teaches ingress interface is provided with a high-priority ingress buffer, a storing unit, a low-priority ingress buffer, and a storing unit, and when said plurality of cells stored in said ingress buffer and storing unit are transferred, priorities are assigned (column 3 lines 32-35, for data packets with different handling-priorities, for each class of priority and for each output port, a separate input queue may be provided).

In regards to claim 10, Luijten teaches buffer control unit includes a timer monitoring unit (figure 2, counter 42) and a receiving unit (figure 3 input buffers 11) for receiving an acknowledge signal from switch and after data portion is transmitted from storing unit, through monitoring by timer monitoring unit whether acknowledge signal is received or not within the predetermined period of time, buffer control unit determines whether or not scheduler permits the output of data portion to the predetermined output (column 5 lines 18-24, In order to avoid loss of data in case of congestion through blocked data packets, a flow-control mechanism for the data packets is added, called grant-mechanism, performed by a not-depicted congestion controller, which creates grant information GR outgoing from any output port 30 to the control unit 25 which distributes this grant information GR to all input buffers 11).



4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luijten in view of Chao in view of Tsuboi et al. (US PAT 5140582), hereinafter referred to as Tsuboi.

Luijten in view of Chao teach selector selects either packet data portion other than said data portion of ingress buffer or data portion in storing unit corresponding to ingress buffer and outputs the selected one to the switch (column 4 lines 25-29, at the output of the input queues 12 a selector 26 serves for connecting at a certain point in time that respective input queue 12 which is allowed to transfer a data packet to the switching device 10 at that point in time).

Luijten in view of Chao do not explicitly teach ingress interface has selectors of the same number as that of ingress buffers.

Tsuboi teaches ingress interface has selectors (figure 2,  $18_1 - 18_n$ ) of the same number as that of ingress buffers (figure 2,  $2_1 - 2_n$ ).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Luijten in view of Chao's system by incorporating multiple selectors as taught by Tsuboi. The motivation is that it is known in the art, in terms of efficiency and reliability, distributed module system, such as multiple selectors is better than one module system such as a single selector. This avoids a single point of failure for the whole system.

***Allowable Subject Matter***

5. Claims 5, 6, 8, 9, 11, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

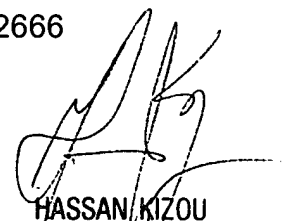
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SA

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HASSAN KIZOU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600